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THE USE OF LIVE TRAPS TO REMOVE STARLINGS AND PROTECT AGRICULTURAL PRODUCTS  
IN THE STATE OF WASHINGTON

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Yakima, Washington.

Much has already been said and written about the use of live traps for the control of starlings in the State of Washington and our efforts have evidently been viewed with interest for we have received letters and questions about our program from all over the world.

Our interest in the possibilities of the live trap began back in 1960 when spring and summer surveys revealed a high nesting population and an increasing percentage of bird damage to a very valuable cherry growing industry. This damage was mainly attributable to the local flocks of juvenile starlings.

Over the years we have learned much about, the habits and characteristics of the starlings and apply this knowledge to the present day program.

Adult birds strive to bring off two broods. The first brood leaves the nest in early May and the second in mid-June. Small flocks of juveniles will then develop in widely scattered areas, usually in irrigated pastures, throughout the county. Even the city reared bird will join its country cousin in these feeding and training areas.

These young birds are easily caught and we find that traps located in these communal areas, or along flyways will reduce local populations before cherries become ripe. We also strive to intercept them enroute to the orchards.

Traps located in prime nesting areas will take a few adult starlings during April and May, However the catch will pick up significantly as the young leave the nest.

Records kept of one man's monthly catches over the years reveal that the average take for the month of May is about 700 starlings and the average for June exceeds 7,000.

In our program in Washington the individual growers are encouraged to maintain their own traps. Bureau personnel will assist the individual in locating his trap, provide live decoys, arrange for necessary bait and periodically check back to keep the area under observation. This portion of the program, along with maintenance of Bureau owned traps, results in establishment of a daily route type operation and enables one man to cover fairly large areas in one day.

This type of program requires extreme mobility on the part of our personnel and is one reason we choose to keep the style of trap used simple and easily handled by one man.

The trap we find most suitable is an adaptation of the "Australian Crow Trap", that measures 6' x 6' x 8', It is constructed in panel sections and may be put up by one man after a little experience in about 15 minutes and easily taken down and ready for transportation to a new location in about 10 minutes.

Many types and styles of entrance panels have been tested. The one most effective and adaptable to our program is made of 1/2 inch exterior plywood 8' x 16' containing three entrance slots, 24" x 1 3/4". These slots are spaced nine inches from both ends and three inches apart in the mid portion of the panel.

Striving to always improve our program and because we felt that the small trap has a saturation point, we began to think in terms of increased trap area volume, and have experimented by joining two or more small traps together. The results have been most encouraging even though at the time we were working with wintering concentrations at cattle feedlots.

The results led us to envision a large trap mounted on a trailer and capable of being handled by one man. Our wishes were granted in April of 1965 when the Bureau was presented with a unit that measured 7' wide, 6' high and 20' long. This trap mounted on a two wheel trailer and fully equipped with hitch and trailer lights is legal for highway travel in the State of Washington, The unit was constructed and donated by the West Valley Kiwanis Club

of Yakima, Washington.

On several occasions this trap has rapidly reduced local flock buildup and contributed greatly to crop protection. It especially lends itself to pasture areas where livestock may be grazing, an area we feel to be a prime trap location site.

In dealing with these crop menacing situations one must appreciate that the local problem will not necessarily involve a dramatic eye catching number of starlings, but quite often consists of flocks of 500 birds or less. However, daily visits by even this many has cost an individual complete loss of a crop.

Starlings have accepted much of the State of Washington for nesting and the problem has spread to include fall ripening crops such as grapes and blueberries. Live trapping programs during 1966 continued to demonstrate the values of the live trap as a tool in protecting a variety of agricultural products.

## WINTER STARLING CONTROL WITH DRC-1339

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Several years ago starling problems in cattle feed lots exploded to economic proportions. In 1964 one northern California feed lot operator reported a loss of \$1,000 per day during the winter months. This resulted from daily activity of over a million starlings. Along with consuming and contaminating large amounts of cattle feed, the birds disturbed the cattle and prevented regular feeding habits. This reduced weight gains drastically.

To combat what had become a state-wide problem, in 1962 a cooperative program between the California Department of Agriculture, the county agricultural commissioners, the United States Bureau of Sport Fisheries and Wildlife, and the University of California was put into action.

The early work consisted of field trials in feed lots located in Solano, Madera, Merced, and Contra Costa Counties to develop behavioral information and control methods.

In northern California, McDougal's feed lot near Collinsville, Solano County, was selected as the field trial site. During winter of 1963-1964 the work consisted of bait preference trials and progressed to use of TEPP treated grain baits. This resulted in a calculated kill totaling 414,000 starlings.

Pilot control programs, under general supervision of the United States Fish and Wildlife Service, Division of Wildlife Services, Bureau of Sport Fisheries and Wildlife, were conducted at McDougal's feed lot during fall and winter of 1966 and 1967. The objective was to reduce the starling population to an economic tolerable number. To achieve this objective it was decided that, weather permitting, it would be necessary to have bait continuously exposed for starling consumption.

During the 1965-1966 operations in mid-October when starlings were first observed in the feed lot, DRC-1339 treated baits were exposed on flat boards and V-troughs mounted on cages containing live starling for decoys (Fig. 1 and 11) and in manger troughs (Fig. 111). After bait acceptance had been achieved an enlarged version of the decoy cage was constructed (Fig. IV). This station contained from 75 to 100 decoys. When it proved successful an artificial pond was constructed and a second large decoy station erected at this location. This area was fenced and DRC-1339 treated baits were exposed in troughs attached to the decoy station and on the ground near the pond. This was an effective baiting area until the winter rains began.

The smaller decoy bait stations were scattered throughout the feed lot and were effective until rain and cold nights limited decoy survival. When this occurred the stations were discontinued and the use of manger trough baiting expanded to cover the entire feed lot. This method of baiting exposes the bait to the starlings as they enter the feed bunkers. Manger trough baiting and the use of 16' x 3" x 1/4" redwood V-troughs placed at 50' intervals on cattle pen fence posts were the most effective techniques used.

Baits used were rolled milo, rolled barley and raisins. The grain and raisin baits were prepared separately in an auger type mixer and then remixed together in a ratio of three parts grain to one part raisins before exposure in the feed lot. The following method of bait preparation was used:

Rolled barley or rolled milo.....	100 pounds
75% DRC-1339.....	1200 grams

The DRC-1339 was dissolved in water. This solution was sprayed over the grain as it tumbled in the mixer.

After the DRC-1339 solution was sprayed on the grain one gallon of liquid molasses was poured over the tumbling bait.

Melted lard at a ratio of one pound of lard to six pounds of grain was then poured over the treated bait and allowed to tumble until adequate coverage was achieved.